

9. Calcareous Prairie

Rarity Rank: S1/G1

Synonyms: Barrens, Calcareous Barrens, Calcareous Clay Prairie, Keiffer Prairie, Jackson Prairie, Blackland Prairie, Calcareous Glade

Ecological Systems: CES203.379 West Gulf Coastal Plain Southern Calcareous Prairie

General Description:

Calcareous prairies are typically small, naturally treeless areas occurring on calcareous substrata in the uplands of central, western, and northwest Louisiana. They range in size from less than one acre, up to 80 or more acres, and occur in a mosaic with calcareous forests. Calcareous prairies have been identified in association with four geological formations: Intermediate Terraces (Pleistocene) associated with old Red River deposits in northwest Louisiana (**Morse Clay Prairies**), the **Fleming**



Formation (Tertiary-Miocene) in central-western Louisiana, the **Jackson Group** (Tertiary-Eocene) in central Louisiana, and the **Cook Mountain Formation** (Tertiary-Eocene) in central and western Louisiana. Soils are stiff calcareous clays (surface pH ~ 7.5-8.0), with very high shrink-swell characteristics, and range in color from red to olive-tan to gray-black. Various soil inclusions occur (depending on geology) and may include calcareous concretions (limestone nodules), marine mollusc shells, shark teeth, and gypsum crystals.

The herbaceous flora is very diverse and dominated by grasses, composites, and legumes. Common grass species are *Schizachyrium scoparium* (little bluestem), *Sporobolus* spp. (dropseeds), *Andropogon glomeratus* (bushy broomsedge), *Andropogon gerardii* (big bluestem), *Sorghastrum nutans* (Indian grass), *Aristida* spp. (three-awn grasses), *Paspalum* spp. (pasp grasses), *Panicum* spp. (panic grasses), *Eragrostis* spp. (love grasses), and *Setaria* spp. (bristle grasses). A number of exotic grass species may occur. Common composites include *Eurybia* spp. and *Symphyotrichum* spp. (asters), *Liatris* spp. (blazing-stars), *Coreopsis* spp. (tick-seeds), *Solidago* spp. (goldenrods), *Ambrosia psilostachya* (western ragweed), *Vernonia* spp. (ironweeds), *Rudbeckia* spp. (brown-eyed susans), *Eupatorium* spp. (thoroughworts), *Echinacea pallida* (pale coneflower), *E. purpurea* (purple coneflower), *Silphium* spp. (rosin-weeds), *Cacalia plantaginea* (Indian plantain), *Gaillardia aestivalis* (blanket flower), and *Helenium* spp. (sneeze-weeds). Frequently encountered legumes include *Acacia angustissima* (prairie acacia), *Baptisia* spp. (indigos), *Desmanthus illinoensis* (wad o'pods), *Galactia volubilis* (milk pea), *Mimosa strigillosa* (sensitive-plant), *Neptunia lutea* (yellow puff), *Petalostemum candidum* (white prairie-clover), and *P. purpureum* (purple prairie-clover).

Additional forbs of prominence are *Anemone berlandieri* (wind flower), *Ranunculus* spp. (crow-foot), *Asclepias* spp. (milk-weeds), *Callirhoe papaver* (poppy-mallow), *Delphinium carolinianum* (larkspur), *Hedyotis nigricans* (bluets), *Hedyotis purpurea* var. *calycosa* (prairie bluets), *Linum* spp. (flax), *Oenothera speciosa* (Mexican evening-primrose), *Ruellia humilis* (wild petunia), and *Salvia azurea* (blue sage). Calciphilic woody species that are often present (and that may come to dominate unburned prairies) include *Crataegus* spp. (hawthorns, often most prominent), *Bumelia lanuginosa* (chittum-wood), *Berchemia scandens* (rattan-vine), *Diospyros virginiana* (persimmon), *Cornus drummondii* (rough-leaf dogwood), *Juniperus virginiana* (eastern red cedar), *Ilex decidua* (deciduous holly), *Smilax bona-nox* (greenbrier), *Fraxinus americana* (white ash), and *Gleditsia triacanthos* (honeylocust). *Maclura pomifera* (osage-orange) may sporadically occur on edges, especially in northwestern Louisiana. Regularly-occurring fire, high soil pH, and extreme physical soil properties are postulated to have acted in concert to generate and perpetuate these upland clay prairies.

Current Extent and Status:

Historically there was an estimated 2,000 to 10,000 acres of calcareous prairie statewide and five to 10 percent of the original extent is thought to remain today (Smith 1993). Currently there are a handful of protected calcareous prairies on each formation.



Calcareous prairies found on the Jackson formation are concentrated near Copenhagen in Caldwell Parish. Many of these are captured by TNC's Copenhagen Hills Preserve. There is one known occurrence of this type on the Catahoula Ranger District of KNF in Grant Parish. There is a high concentration of Cook Mountain calcareous prairies on the Winn Ranger District of KNF near Calvin in Winn Parish. Recently, the USFS has been working to remove invading woody vegetation and expand these prairies openings to their former extent. There are a few prairies just off of KNF on private land that have an opportunity to be protected and managed for the benefit of this habitat type. A narrow finger of the Cook Mountain Formation extends southwest into Sabine Parish and supports one known calcareous prairie near Florien that is degraded but recoverable. There are surely more prairies along this portion of the Cook Mountain Formation. Fleming Calcareous Prairies are scattered in Vernon, Rapides, and Natchitoches Parishes. Several occurrences are on Ft. Polk and KNF. Most are on private land and are likely degraded. Given the inclusional nature of this habitat, they are frequently site prepared and planted in loblolly pine plantations despite their poor capacity to grow timber. Survey work is needed to determine the condition of calcareous prairies on private land.

There are about 15 known Morse Clay prairies in Bossier and Caddo parishes, several of which are found on public land. Several are captured by Bodcau WMA, which is owned by COE and leased by LDWF. Some of the prairie acreage on Bodcau WMA is

protected in registered natural areas but much (probably >50%) of the acreage that was historically Morse Clay prairie on Bodcau WMA is now managed for food plots. There is an excellent opportunity to attempt to restore this habitat on Bodcau WMA.

There are several Morse Clay calcareous prairies known to occur on Barksdale Air Force Base. Most of these prairies, particularly the ones within Escarpment Natural Area, are of high quality (McInnis 1997). The Barksdale prairies are important intrinsically, but they also present a standard by which the quality of other prairies may be evaluated. This is especially important in monitoring the results of restoration projects. The status of the Morse Clay prairies on private land is unknown. Only one such prairie has been visited in the last 10 to 12 years. The prairie was still viable but contained large-diameter *Juniperus virginiana* (eastern redcedar).

CALCAREOUS PRAIRIES SPECIES OF CONSERVATION CONCERN (12)		
BIRDS	BUTTERFLIES	MAMMALS
Northern Bobwhite	Dusted Skipper	Hispid Pocket Mouse
American Woodcock	Reakirt's Blue	Eastern Harvest Mouse
Loggerhead Shrike	Little Metalmark	
Field Sparrow	Southern Dogface	REPTILES
Grasshopper Sparrow		Western Slender Glass Lizard

Priority Species Research and Survey Needs:

Loggerhead Shrike: BBS data for the period 1966-2000 indicate a 71% population decline rangewide. Monitoring of reproductive success and the effects of pesticides on food availability are needed along with statewide evaluation of changes in available habitat.

Birds: Work with state BBS coordinator to ensure that BBS routes are conducted in this habitat where feasible.

Hispid Pocket Mouse: Considered imperiled in Louisiana, intensive surveys needed to update occurrence records and abundance for inclusion in the LNHP database.

Eastern Harvest Mouse: Considered vulnerable in Louisiana, intensive surveys are needed to update occurrence records and abundance for inclusion in the LNHP database.

Western Slender Glass Lizard: Exhibiting rangewide population declines; their status in Louisiana is not well known. Work cooperatively with forestry agencies, forestry companies and field biologists to collect observation data.

Species Conservation Strategies:

1. Northern Bobwhite and Grassland Birds: Support the implementation of recommended habitat restoration actions specified in NBCI and by LDWF Quail and Grassland Bird Task Force.

Threats Affecting Habitat:

The following table illustrates the threats identified for this habitat type and the sources of these threats. This represents all threats and sources of threats identified across all ecoregions of the state where this habitat occurs.

Source of Threat	Threat			
	Altered Composition/ Structure	Habitat Destruction or Conversion	Habitat Disturbance	Soil Erosion
Conversion to agriculture or other forest types	XXX	XXX		
Incompatible forestry practices	XXX		XXX	XXX
Invasive/alien species	XXX		XXX	XXX
Log deck debris			XXX	
Management of/for certain species	XXX		XXX	
Oil or gas drilling		XXX	XXX	
Recreational use/vehicles			XXX	XXX
Residential development		XXX	XXX	

Habitat Conservation Strategies:

1. Conduct status surveys to determine the extent and condition of this habitat type (Morse clay prairie, all types).
2. Work with land managers/hunting clubs/extension agents, etc. to discourage the placement of food plots within this habitat type.
3. Encourage the reporting of occurrences of this habitat type (target foresters).
4. Investigate funding opportunities for prairie restoration and the development of plant materials for prairie restoration.
5. Provide educational information on this habitat type and its importance to species of conservation concern to landowners/land managers through technical pamphlets and the LDWF website.
6. Work with the legislature to provide incentives (tax breaks, etc.) to landowners to retain the natural state of areas where this habitat occurs.
7. Support research to determine the effectiveness of restoration efforts of this habitat.

References:

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